

8. (Currently Amended) A compound dispersing apparatus comprising:

a basket-shaped vessel, said vessel adapted to contain dispersing media particles in an interior cavity formed therein, said vessel adapted for submersion in a tank filled with a compound;

a plurality of stirrer vanes housed within said vessel, each engaged at first ends with an elongated at first ends with an elongated shaft extending in said interior cavity, said shaft defining a central axis of said cavity;

each said stirrer vane extending a first distance from said axis to a distal edge;

means to rotate said shaft to thereby rotate said stirrer vanes in said interior cavity;

a plurality of stirrer fins, each engaged at a first end with an interior wall of said vessel, each said stirrer fins extending from said first end to a distal end, each said distal end of said stirrer fins end being substantially parallel to said distal edge of said vanes;

each of said stirrer fins positioned in its engagement with said interior wall whereby said distal end reaches a momentary substantial alignment with a corresponding said distal edge of one of said stirrer vanes during each rotation of said shaft;

a gap formed between said distal end and said distal edge during said momentary alignment, said gap defined by an empty space bordered on a first side by said distal end and on a second side, a distance from said first side, by said distal edge; and

said gap providing means to increase a shear force of said dispersing media particles during said momentary alignment, and

whereby said compound in said tank is drawn through said interior cavity and existed back to said tank by rotation of said vanes when said vessel is submerged in said tank.

9. (Previously Presented) The compound dispersing apparatus according to claim 8, wherein said means to rotate said shaft comprises:

said shaft having an exterior portion extending along said central axis, outside said vessel; and

means to engage said means to rotate said shaft to said exterior portion.

10. (Previously Presented) The compound dispersing apparatus according to claim 8, wherein said means to rotate said shaft comprises:

means to rotate said vessel around said central axis in a direction opposite said rotation of said shaft.

11. (Previously Presented) The compound dispersing apparatus according to claim 9, wherein said means to rotate said shaft comprises:

means to rotate said vessel around said axis in a direction opposite said rotation of said shaft.

12. (Previously Presented) The compound dispersing apparatus according to claim 11, wherein said means to rotate said vessel comprises:

a second shaft engaging an upper portion of said vessel;
said second shaft having an axial passage extending therein along said central axis and adapted to accommodate rotation of said shaft therein;
means to rotate said shaft; and
means to rotate said second shaft in a direction opposite that of said shaft.

13. (Previously Presented) The compound dispersing apparatus according to claim 10, further comprising:

secondary vanes engaged to an exterior surface of said vessel, whereby rotation of said vessel, rotates said secondary vanes around said central axis.

14. (Previously Presented) The compound dispersing apparatus according to claim 11, further comprising:

secondary vanes engaged to an exterior surface of said vessel, whereby rotation of said vessel, rotates said secondary vanes around said central axis.

15. (Previously Presented) The compound dispersing apparatus according to claim 12, further comprising:

secondary vanes engaged to an exterior surface of said vessel, whereby rotation of said vessel, rotates said secondary vanes around said central axis.

16. (Previously Presented) The compound dispersing apparatus according to claim 15, further comprising:

said secondary vanes engaged to a lower exterior surface of said vessel;

said lower exterior surface being on an opposite side of said vessel from said upper portion of said vessel; and

whereby rotation of said vessel, rotates said secondary vanes around said central axis.

17. (Previously Presented) The compound dispersing apparatus according to claim 8 additionally comprising:

said dispersing media particles having a diameter; and

said distance of said gap being ~~a distance~~ between 6 to 15 times said diameter.

18. (Previously Presented) The compound dispersing apparatus according to claim 16 additionally comprising:

said dispersing media particles having a diameter; and

said distance of said gap being ~~a distance~~ 6 to 15 times said diameter.

SECTION 103 OBJECTIONS

The examiner has rejected claims 8-10 under 35 USC §103 per Hockmeyer in view of Shen and with the further addition of elements from Dairoku.

The Examiner cites Hockmeyer for the elements of the stirrer vanes extending away from a central axis and then combines this construction with a few elements of Shen and some of Dairoku in the argued obvious combination.

"When prior art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself." Interconnect Planning Corp. 774 F.2d at 1143, 227 USPQ at 551. See also Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986). Something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. Lindemann Maschinenfabrik GmbH v. American Hoist and Derrick Co., 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984).

Applicant's device in the specification provides a large increase in the shear power of the mixer in a smaller unit that would be possible normally. This is provided by employing counter rotating fins and blades which have a moment of alignment forming gaps therebetween, which increases shear power dramatically.

In Hockmeyer, there is neither disclosed nor suggested, any stirrer fins. In Hockmeyer, the basket 60 corresponding to the vessel 2 of the present invention does not rotate nor is it intended to. In the present invention, the vessel 2 and the stirrer vane 28 are rotated in the opposite direction each other with the formed gaps to increase shear.

Hockmeyer does not teach or even consider counter rotation of the contents *inside* the vessel, since it requires the generation of up-and-down random stirring of the contents inside the vessel using radially oriented stirring rods 140 arranged in a spiral array axially along the drive shaft 90.

Neither does the vessel rotate in Hockmeyer at all. Only the stirring rods 140 rotate and during rotation of the stirring rods 140 with drive shaft 90, the beads 76 are caused to *move with a random up and down motion inside the entire vessel, rather than moving as a mass only in a rotational motion*, (like all the other cited art). (See Column 3, line 61 on)

Thus Hockmeyer achieves the shearing or grinding action specifically by providing this up and down random motion inside the vessel, and that action would not occur using the combination suggested by the Examiner.

Consequently Hockmeyer teaches against a circular and counter rotation of both blades and vanes and the shear developed between the gap bordered by the two opposite ends of the blades and vanes during the circular rotation of the liquid and beads. There is as such, nothing in Hockmeyer teaching the desirability of using the shear between counter rotating blades and vanes which rotate the mixture in a circular motion, since Hockmeyer won't work in this fashion to generate the Hockmeyer required shear from random up and down motion inside the vessel.

SHEN

The Examiner has indicated that Shen had elements of applicants claimed device. However, Shen has first mixing blades 52 and second mixing blades 53 which overlap and whose ends do not border a gap therebetween on opposite sides of the gap. (See fig 3 of Shen). Neither does Shen teach or suggest using dispersing media particles and generated shear for the mixing.

As can be seen in the drawings of Shen, a distal edge of a blade of the first blade assembly 52 and a distal end of the second blade assembly 53 are provided alternately at different levels from each other down the axis of the device, and overlap partially during respective rotation. Thus the distal edge of the first blade assembly 52 can not reach a momentary substantial alignment with the corresponding distal end of one of the second blade assembly 53 during each rotation of the shaft.

Accordingly, there is no gap formed in Shen between the distal edge of the first blade assembly 52 and the distal end of the second blade assembly 53 which is bordered on a first side by the distal end and on the second side, a distance from said first side, by the distal edge. Consequently the structure-generated means to increase shear, is also absent from Shen since it is missing the structural gap component to generate it. This is probably because Shen neither discloses nor suggests, the use of the dispersing media particles, and shear, for the process of mixing.

Conversly applicant's device provides the stirrer fins 29 to regulate the movement of the media and generate preferable resistance against the media, whereby a marked increase shear force of the dispersing particles is generated at the moment of stirring (Page 18, Lines 7 to 10 of the Specification). This is

provided by the elements of the momentary substantial alignment between the distal end of each of the stirrer fins and the corresponding distal edge of one of the stirrer vanes during each rotation of said shaft, which border the empty space therebetween defining the inline gap.

Since the distal ends of Shen, do not face each other and are never aligned, they can never border and define a gap between them. The Shen construction taught and claimed, lacks these elements and structure and lack the function of increasing shear provided by this arrangement of elements.

Further as noted Shen is essentially a blender and makes no mention or teaching of employing dispersing media particles and generated shear for the mixing, and Shen works the opposite from Hockmeyer which does not rotate the vessel and requires that one set of blades generate up and down random motion inside the vessel.

As noted there must be some reason for the combination other than the hindsight gleaned from the invention itself. Here, in addition to lacking elements, both devices work very differently and won't work with the other's construction. There is no reason to combine them and the Examiner may have strayed into a hindsight analysis.

Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. Under section 103, teachings of references can be combined only if there is some suggestion or incentive to do so. The prior art of record fails to provide any such suggestion or incentive. Accordingly, we hold that the court below erred as a matter of law in concluding that the claimed invention would have been obvious to one of ordinary skill in the art under section 103. (ACS Hospital Systems, Inc. v. Montefiore Hospital et alCA FC 221 USPQ 929 at 933,1984)

Also as noted, there is no teaching or suggestion in Hockmeyer of the desirability of using the shear between counter rotating blades and vanes which rotate the mixture in a circular motion, since Hockmeyer can't work in this fashion. Consequently there is no reason or incentive to combine Hockmeyer with the overlapping counter rotating first and second blade assemblies of Shen which require counter-rotation to work but do not employ and dispersing media.

EVEN IF COMBINED VALIDLY, THE COMBINATION
LACKS ELEMENTS OF APPLICANT'S DEVICE

The Examiner cites Shen for many of the elements lacking in Hockmeyer. The reason they are lacking as noted, is that Hockmeyer works very differently. However even if the combination were allowable, Shen as noted has no gap formed in between the distal edge of the first blade assembly 52 and the distal end of the second blade assembly 53 which is bordered on a first side by the distal end and on the second side, a distance from said first side, by the distal edge. Shen further lacks the result of this unique component arrangement since it does not have the resulting means to increase shear. As such, even if the combination were valid, it would lack elements of Applicant's claimed device, and the utility and function they provide.

As such, the objection per 103 is respectfully traversed.

REMARKS AND CONCLUSION

Applicants' device claims elements providing function, which are neither taught nor suggested in the cited prior art of Hockmeyer or Shen, which both operate so differently as to preclude any combination with each other. Nor is there any teaching or suggestion of a combination in either reference since they do operate so differently. As such, the base claims of Applicants' device have been shown to be patentable and as such all dependent claims thereto should also be patentable.

Additionally, Applicant as noted in the specification, considers the improvement to be substantial because of the major increase in shear developed in the small size of the device. As such, Applicant feels it is a significant advance in the field.

However, even if the Examiner does not consider Applicant's claimed device a great advance in the crowded goal art, it has been established that one should not be deprived of patent protection where it can be shown that *any genuine improvement* has been made, on comparison, with other inventions in the art, even if the improvement is slight, or lacks the appearance of a great advance in the art. In re Lange, 128 USPQ 365, the CCPA on page 367 stated that:

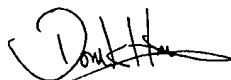
"We think that the present application is a distinct improvement of Jezalik and represents an advance in the art not obvious, having patentable novelty. The art is a crowded and comparatively simple one and in such an art, great advances are not to be expected. However patentability will not be denied to an invention which accomplishes a small, but nevertheless genuine improvement not thought of by others.."

Further, the CCPA in the case of *re Meng and Driessen*, 181 USPQ 94, on page 97, reiterated the principal that, even though the invention seems a simple advance over prior art, *after the fact*, simplicity, particularly in a crowded art, argues *for*, rather than against, patentability.

The Examiner notes that Shen and Dairoku are two of many in a crowded art yet no single piece of art nor proper combination of art has all the elements and resulting utility as Applicant's device. Applicants' device therefor provides genuine improvement by markedly increasing shear with the unique arrangement of blades and vanes and open gaps therebetween, in a small package. As noted, even where the improvements are considered simple in a crowded art, and not major by the Examiner, Applicants' device provides improvements that argue *for* patentability. As such, all claims of the application should now be in position for allowance.

Finally, should the Examiner have suggestions to more clearly define the claims to more clearly define the patentable subject matter, and hasten approval, the Applicant's attorney would be most receptive to such by telephone or Examiner's amendment.

Respectfully submitted,



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